CLAIMS

What is claimed is:

1. A magnetic head, comprising:

a free layer;

an antiparallel (AP) pinned layer structure spaced apart from the free layer, the AP pinned layer structure includes at least two Fe-containing pinned layers having magnetic moments that are self-pinned antiparallel to each other, the pinned layers being separated by an AP coupling layer of Cr; and

a high coercivity layer positioned towards the AP pinned layer structure on an opposite side thereof relative to the free layer, the high coercivity structure pinning a magnetic orientation of the AP pinned layer structure.

2. A head as recited in claim 1, wherein the free layer includes a layer of Fe.

3. A head as recited in claim 2, wherein the free layer further includes a layer of NiFe.

4. A head as recited in claim 1, further comprising a spacer layer of Cr positioned between the free layer and the AP pinned layer structure.

5. A head as recited in claim 4, wherein the spacer layer has a thickness of between about 15 and 25Å.

6. A head as recited in claim 1, wherein the high coercivity layer is formed of CoPtCr.

7. A head as recited in claim 6, wherein the CoPtCr is formed directly on one of the Fe-containing pinned layers of the AP pinned layer structure.

8. A head as recited in claim 1, wherein the head forms part of a GMR head.

9. A head as recited in claim 1, wherein the head forms part of a CPP GMR sensor.

10. A head as recited in claim 1, wherein the head forms part of a tunnel valve sensor.

11. A magnetic head, comprising:

a free layer, the free layer including a layer of Fe;

an antiparallel (AP) pinned layer structure spaced apart from the free layer, the AP pinned layer structure includes at least two Fe-containing pinned layers having magnetic moments that are self-pinned antiparallel to each other, the pinned layers being separated by an AP coupling layer of Cr;

a spacer layer of Cr positioned between the free layer and AP pinned layer structure; and

a high coercivity layer positioned towards the AP pinned layer structure on an opposite side thereof relative to the free layer, the high coercivity structure pinning a magnetic orientation of the AP pinned layer structure.

12. A head as recited in claim 11, wherein the free layer further includes a layer of NiFe.

13. A head as recited in claim 11, further comprising a spacer layer of Cr positioned between the free layer and the AP pinned layer structure.

14. A head as recited in claim 13, wherein the spacer layer has a thickness of between about 15 and 25Å.

15. A head as recited in claim 11, wherein the high coercivity layer is formed of CoPtCr.

16. A head as recited in claim 15, wherein the CoPtCr is formed directly on one of the Fe-containing pinned layers of the AP pinned layer structure.

17. A head as recited in claim 11, wherein the head forms part of a GMR head.

18. A head as recited in claim 11, wherein the head forms part of a CPP GMR sensor.

19. A head as recited in claim 11, wherein the head forms part of a tunnel valve sensor.

20. A magnetic storage system, comprising:

magnetic media;

at least one head for reading from and writing to the magnetic media, each head having:

a sensor having the structure recited in claim 1;

a writer coupled to the sensor;

a slider for supporting the head; and

a control unit coupled to the head for controlling operation of the head.

21. A magnetic storage system, comprising:

magnetic media;

at least one head for reading from and writing to the magnetic media, each head having:

a sensor having the structure recited in claim 11;

a writer coupled to the sensor;

a slider for supporting the head; and

a control unit coupled to the head for controlling operation of the head.